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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,929	09/23/2003	Katsumasa Yoshii	9281-4666	3347

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EXAMINER

NGUYEN, HOAN C

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/668,929

Applicant(s)

YOSHII ET AL.

Examiner

HOAN C. NGUYEN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-23 is/are pending in the application.
- 4a) Of the above claim(s) 1-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 17-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/23/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature of “the reflector serves as a transparent electrode” in claims 22 and 23 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22 and 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 22 and 23 recite “the reflector serves as a transparent electrode”. However, **the reflector is not transparent**. The specification discloses “a transparent electrode 16 formed of an ITO (Indium Tin Oxide) film” (paragraph 74th), wherein ITO film is not a reflector. Please correct the specification and claims. Moreover, **the reflector serves as a electrode** for reducing thickness/weight of LCD and increasing image quality due to reflecting directly from the electrode.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Akins et al. (US6285425B1).

In regard to claim 17, Akins et al. teach (Figs. 2 and 5-6) a liquid crystal display device comprising a reflector (ridged reflector 110) having a plurality of light reflective concave portions (semi-conical viewing cones) on a surface of a base material (ridged surface 134), each said concave portion having a curved surface with a maximum inclination angle at one side portion thereof so that the one side portion has a larger reflectance magnitude than an opposing side portion (see attachment), and a light reflectance peak at a predetermined angle in accordance with a location of the maximum inclination angle, and that opposes a viewpoint of an observer (see attachment); wherein

- the base material of aluminum is reflective, thereby forming a reflective liquid crystal display device (claim 18).
- the base material is semitransparent and semi-reflective, thereby forming a semitransparent and semi-reflective liquid crystal display device (col. 1 line 67 to col. 2 line 5 and col. 5 lines 55-56 cited “the reflective metallic layer 568 will

become discontinuous and; hence, light transmissive") according to claims 19 and 20.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 17-21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (US6130736A) in view of Akins et al. (US6285425B1).

Sasaki et al. teach (Fig. 1) a liquid crystal display device comprising:

- a pair of substrates 1/2,
- a liquid crystal layer 3 disposed between the substrates,
- the reflector 14 disposed on one of the substrates,
- a transparent intervening layer (a first overcoat layer 17a) disposed on the reflector,
- a color filter layer 16 disposed on the transparent intervening layer,
- a transparent planarization layer (a second overcoat layer 17b) disposed on the color filter layer,
- a transparent electrode (9 made of ITO (indium-tin-oxide)) disposed on the transparent planarization layer,

- an alignment layer (an orientation film 11) disposed between the transparent electrode and the liquid crystal layer.

However, Sasaki et al. fail to teach the reflector with feature in claims 17.

Akins et al. teach the reflector with feature in claim 17 for diffusing in particular direction (see attachment) wherein the base material is semitransparent and semi-reflective, thereby forming a semitransparent and semi-reflective liquid crystal display device for dual mode LCD (col. 1 line 67 to col. 2 line 5 and col. 5 lines 55-56 cited “the reflective metallic layer 568 will become discontinuous and; hence, light transmissive”) according to claims 19 and 20.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Sasaki et al. disclosed with the reflector with the feature in claims 17-18 for diffusing in particular direction and the features in claims 19-20 for dual-mode LCD.

3. Claims 17, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akins et al. (US6285425B1).

In regard to claim 17, Akins et al. teach (Figs. 2 and 5-6) a liquid crystal display device comprising a reflector (ridged reflector 110) having a plurality of light reflective concave portions (semi-conical viewing cones) on a surface of a base material (ridged

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surface 134), each said concave portion having a curved surface with a maximum inclination angle at one side portion thereof so that the one side portion has a larger reflectance magnitude than an opposing side portion (see attachment), and a light reflectance peak at a predetermined angle in accordance with a location of the maximum inclination angle, and that opposes a viewpoint of an observer (see attachment);

However, Akins fails to disclose the electrode can be formed as reflector as claims 22 and 23 cited.

In the conventional art, the electrode can be formed as reflector for reducing step manufacturing and thickness/weight of LCD and increasing image quality due to reflecting directly from the electrode.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Sasaki et al. disclosed with the electrode being formed as reflector for reducing step manufacturing and thickness/weight of LCD and increasing image quality due to reflection directing from the electrode.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

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- Mizobata et al. (US6266112B1) disclose a reflective liquid crystal display with a convex-concave at the reflecting surface of the reflector wherein a fine control of a shape such as an inclined angle of the convex-concave is difficult.
- Tanada (US6199992B1) discloses a display device using the reflector, which has three-dimensional concavity, such as a spherical concavity, having concave curves in cross section as shown in FIG. 1 or 3.
- Sasaki et al. (US6219120B1) disclose a liquid crystal display with corrugated reflective surface, which are curvature radius less than 100 μ m, a depth about 0.5-5 μ m and the width less than 45 μ m.
- Doriguzzi et al. (US4106859) disclose reflector with light-scattering surface for LCD, wherein chromium layer covering depressions forms reflector.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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HOAN C. NGUYEN
Examiner
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A handwritten signature in black ink, appearing to read 'DUNG T. NGUYEN', with a long horizontal flourish extending to the right.

DUNG T. NGUYEN
PRIMARY EXAMINER